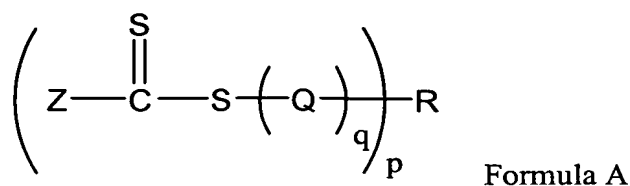


Amendments to Claims

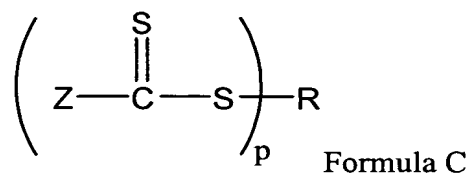
1-10. (withdrawn)

11. (currently amended) A process for the synthesis of a block polymer of the general formula:



comprising contacting:

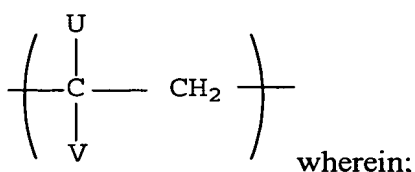
- (i) one or more vinyl monomers of structure $\text{CH}_2=\text{CUV}$, and;
- (ii) a chain transfer agent:



having a chain transfer constant greater than about 0.1; and

- (iii) free radicals produced from a free radical source;
- wherein:

Q is a polymer comprising the repeating units of:



U is selected from the group consisting of hydrogen, halogen, and optionally substituted C_1 - C_4 alkyl wherein the substituents are independently selected from the group that consists of hydroxy, OR'' , carboxy, $\text{O}_2\text{CR}''$, and $\text{CO}_2\text{R}''$;

V is selected from the group consisting of hydrogen, R'' and halogen, provided when Q [is] comprises styrene or methyl methacrylate, Z is not alkoxy; wherein:

Z is optionally substituted alkylthio; optionally substituted alkoxy; dialkyl- or diaryl-phosphonato; or dialkyl- or diaryl- phosphinato;

R is selected from the group consisting of optionally substituted alkyl; optionally substituted alkenyl; optionally substituted alkynyl; an optionally substituted saturated, unsaturated or aromatic carbocyclic or heterocyclic ring; and a polymer chain prepared by any polymerization mechanism; in agent C, R• is a free-radical leaving group that initiates free radical polymerization;

R" is selected from the group consisting of optionally substituted C₁-C₁₈ alkyl, C₂-C₁₈ alkenyl, aryl, heterocyclyl, aralkyl, alkaryl wherein the substituents are independently selected from the group that consists of epoxy, hydroxy, alkoxy, acyl, acyloxy, carboxy and carboxylates, sulfonic acid and sulfonates, alkoxy- or aryloxy-carbonyl, isocyanato, cyano, silyl, halo, and dialkylamino;

q is 1 or an integer greater than 1 wherein when $q = 1$, then Q is a homopolymer chain resulting from a single monomer species and R is said polymer chain prepared by any polymerization mechanism;

wherein when $q \geq 2$, then Q is a copolymer chain resulting from two or more monomer species in irregular sequence and R is said polymer chain prepared by any polymerization mechanism; or

wherein when $q \geq 2$, then Q is a block copolymer chain resulting from two or more monomer species in discreet sequence and p is 1.

12. (previously presented) The process according to claim 11, wherein said polymer chain in R is poly(ethylene oxide); R'' is carboxy and carboxylates, or sulfonic acid and sulfonates; or wherein L is diallyldimethylammonium chloride.

13. (currently amended) The process according to claim 11, wherein Q [is] comprises styrene, a functional styrene, butadiene, chloroprene, an acrylate ester, a methacrylate ester or an acrylonitrile.

14. (currently amended) The process according to claim 13, wherein Q [is] comprises vinyl acetate.

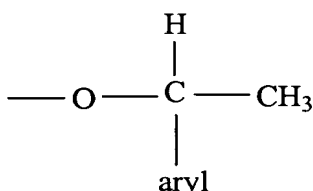
15. (previously presented) The process according to claim 11, wherein R is an alkyl group substituted with substituents selected from the group consisting of aryl, alkenyl, alkynyl and alkyl groups.

16. (previously presented) The process according to claim 11, wherein R is an alkyl group substituted with a substituent selected from the group consisting of aryl, alkenyl and alkynyl groups.

17. (previously presented) The process according to claim 11, wherein R is methyl.

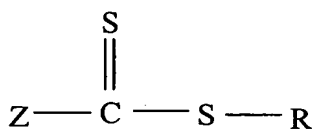
18. (previously presented) The process according to claim 11, wherein Z is optionally substituted alkoxy.

19. (previously presented) The process according to claim 18 wherein said Z is:



20. (currently amended) The process according to claim 11 wherein Q [is] comprises styrene, methyl acrylate, ethyl acrylate, butyl acrylate, tert-butyl acrylate, vinyl acetate, or acrylic acid wherein Z is alkoxy and R is optionally substituted alkyl wherein said optional substituents are alkoxycarbonyl and alkyl, or two alkoxycarbonyls.

21. (previously presented) The process according to claim 11, wherein the chain transfer agent is a polymer made by contacting a monomer having the formula $\text{CH}_2=\text{CUV}$ with free radicals from a free radical source and a compound having the formula:



22. (previously presented) The process according to claim 11 wherein in the chain transfer agent $p = 1$, R is alkyl and Z is optionally substituted alkoxy, said optional substituents being alkyl and alkoxycarbonyl, or two alkoxycarbonyls.

23-27. (withdrawn)

28. (previously presented) The process according to claim 11 comprising increasing the ratio of (ii) to (iii) and obtaining a polymer having a polydispersity in the range of 1.6 to 2.0.

29. (previously presented) The process according to claim 28, wherein the polymer so obtained has a polydispersity of about 1.5.

30. (previously presented) The process according to claim 11, wherein Z is optionally substituted alkoxy.

31. (previously presented) The process according to claim 11, wherein the polymer has at least two polymer blocks of polystyrene/polymethyl acrylate.

32. (previously presented) The process according to claim 21 comprising increasing the ratio of (ii) to (iii) and obtaining a polymer having a polydispersity in the range of 1.6 to 2.0.

33. (previously presented) The process according to claim 32, wherein the polymer so obtained has a polydispersity of about 1.5.

34. (previously presented) The process according to claim 21, wherein Z is optionally substituted alkoxy.

35. (previously presented) The process according to claim 21 wherein Z is alkoxy and R is optionally substituted alkyl wherein said optional substituents are alkoxycarbonyl and alkyl, or two alkoxycarbonyls.

36. (currently amended) The process according to claim 21 wherein Q [is] comprises styrene, methyl acrylate, ethyl acrylate, butyl acrylate, tert-butyl acrylate, vinyl acetate, or acrylic acid wherein Z is alkoxy and R is optionally substituted alkyl wherein said optional substituents are alkoxycarbonyl and alkyl, or two alkoxycarbonyls.

37. (previously presented) The process according to claim 11, wherein substituents in R and Z comprise alkylcarbonyloxy, aryloxycarbonyl, carboxy, acyloxy, cyano, arylalkylcarbonyl, hydroxy, halogen, amino, epoxy, or alkoxy.

38. (withdrawn).

39. (previously presented) The process according to claim 11, wherein the substituents in R'' are independently selected from the group that consists of epoxy, hydroxy, alkoxy, carboxy, sulfonic acid, and halo.

40. (withdrawn).

41. (withdrawn).